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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/776,298 | 02/02/2001 | Ira D. Sasowsky | UA372 | 9202 |

26360 7590 06/17/2003

RENNER, KENNER, GREIVE, BOBAK, TAYLOR & WEBER
FOURTH FLOOR
FIRST NATIONAL TOWER
AKRON, OH 44308

EXAMINER

BARRY, CHESTER T

ART UNIT

PAPER NUMBER

1724

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------|-------------------------------|---------------------------------|--|
| Advisory Action | Application No. 09/776,298 | Applicant(s) SASOWSKY ET AL. | |
| | Examiner Chester T. Barry | Art Unit 1724 | |

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 04 June 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☐ The period for reply expires _____ months from the mailing date of the final rejection.

b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. ☐ The proposed amendment(s) will not be entered because:

(a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);

(b) ☐ they raise the issue of new matter (see Note below);

(c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

(d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____

3. ☒ Applicant's reply has overcome the following rejection(s): see attached.

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☒ The a) ☐ affidavit, b) ☐ exhibit, or c) ☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: see attached.

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☒ For purposes of Appeal, the proposed amendment(s) a) ☐ will not be entered or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: none.

Claim(s) objected to: 10.

Claim(s) rejected: 1-5, 7-9, 11.

Claim(s) withdrawn from consideration: _____.

8. ☐ The proposed drawing correction filed on _____ is a) ☐ approved or b) ☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____.

10. ☐ Other: _____.

Chester T. Barry
Primary Examiner
Art Unit: 1724

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Page 2:

Applicants' argument that the skilled artisan would have understood Behrends to have meant "or" where he wrote "and/or" is unpersuasive. While the cited extrinsic evidence describes the opinions of some who view with disfavor the use of "and/or," applicants admit that "x and/or y" means x, y, or both x and y. Further, any suggestions that Behrends meant "or" where "and/or" was used is contradicted by Behrends' recognition that mixed media may be used: Note Behrends' description of multiple layers of media at col 1 line 13.¹

Applicants argue Behrends is not enabling of the claimed invention, citing "In re Donahue" [sic, In re Donohue]. From Donohue, please note further that

the fact that the author of a pub[li]cation did not attempt to make his disclosed invention does not indicate one way or the other whether the publication would have been enabling.

In re Donohue, 226 USPQ 619 at 621 (Fed. Cir. 1985).

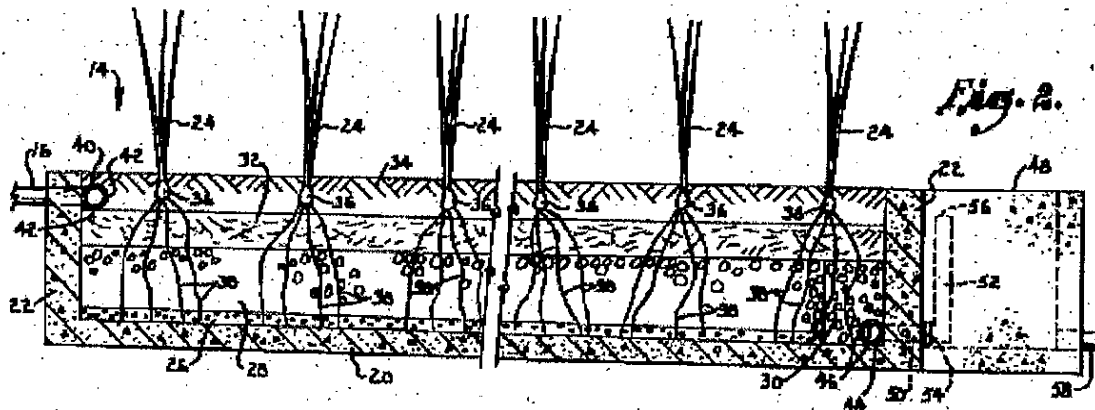
Further, if applicants wish to attack the presumptively enabled disclosure, they should address each ex parte Forman factor: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *Ex parte Forman*, 230 USPQ 546, 547 (BOPAI 1986).

¹ "[A] layer[or layers] of soil, muck, gravel, or other media . . . " "Layers" of A, B, or C necessarily means at least one layer of A, B, or C next to at least one layer of B or C, A or C, or A or B, respectively, because two contiguous layers of A alone is nothing other than one larger layer of A. So if Behrends' recitation of "layer(s)" means

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With respect to applicants' assertion that the "general practice" in the art is to use singular substrates, please see Scott's disclosure of gravel layer 28 and crushed limestone layer 30.



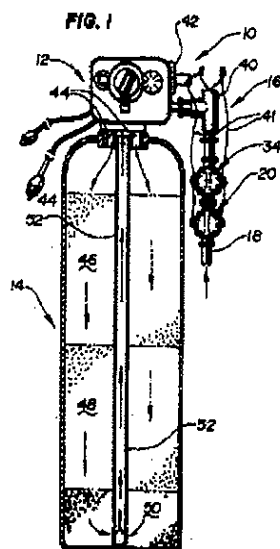
Scott

See also Snee's description of "gravel/calcite layer 50" (col 4 line 53) for removing iron from water. See also JP 53-82052's description of heavy metal-laden waste water treated by a solid matter prepared by the addition of lime, cement, and dolomite to illite.

anything at all, it's the recognition that in this art it was known to use different compositions of substrate media in filtration systems.

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Snee

The rejection of claim 10 under §112(2nd) is withdrawn in light of the responsive remarks.

The art rejection(s) of claim 10 is/are withdrawn for want of the prior art to teach or suggest the claimed "alternating ring" arrangement in a pipe.

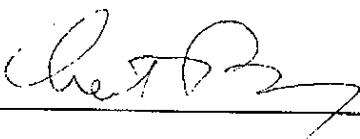
Claim 10 would be allowed if presented in independent form. In the meantime, it is objected to as being dependent on a rejected base claim.

Applicants discuss various courts' view of the expression "and/or" as an "abominable invention . . . devoid of meaning" or as "a cunning device to conceal rather than express meaning." Applicants submit that "and/or" has the tendency to confuse rather than

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clarify meaning in patent applications. While these points are not persuasive with the examiner on whether Behrends describes the claimed invention, it is noted that assignee's prior patents USP 6528554 and USP 6446031 recite "and/or" in at least claim 8 and claim 9, respectively. To the extent that assignee agrees with applicants' view that "and/or" has the tendency to confuse rather than clarify meaning in patent applications, assignee is advised of 35 USC §251 under which a patent may be reissued to correct an error made without deceptive intent.



703-306-5921

CHESTER T. BARRY
PRIMARY EXAMINER

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of)
IRA SASOWSKI, ET AL.)
Serial No. 09/776,298)
Filed February 2, 2001)
For A METHOD FOR)
REMOVING METALS)

Chester T. Barry, Examiner

Certificate of Mailing

I hereby certify that this correspondence was deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on October 1, 2003.


Denise Goldinger, Sec'y to Donald J. Firca, Jr.

PETITION FOR EXTENSION OF TIME
PURSUANT TO 37 CFR '1.136(a)

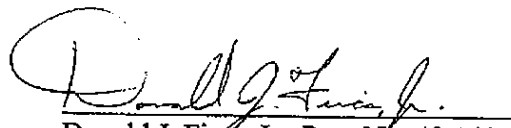
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Applicant's attorney hereby requests an extension of time, pursuant to 37 CFR '1.136(a) to allow the filing of the Applicant's enclosed Response to the restriction requirement, within the third month.

You are hereby authorized to charge payment of any fees associated with this communication or credit any overpayment to Deposit Account No. 50-0959 (089498-0372).

Respectfully submitted,


Donald J. Firca, Jr., Reg. No. 48,140
Roetzel & Andress
222 South Main Street
Akron, Ohio 44308
Telephone: (330) 376-2700
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Attorney for Applicant(s)

October 1, 2003

089498-0372/1110503_1

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Appl. No. : 09/776,298
Applicant : Ira Sasowski et al.
Filed : February 2, 2001
TC/A.U. : 1724
Examiner : Chester T. Barry

Docket No. : 089498.0372

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE AND AMENDMENT

Sir:

This correspondence is in response to the final Office action dated April 1, 2003 (Paper No. 13). The three month period for response expired on July 1, 2003. Pursuant to 37 C.F.R. §1.136(a), applicants hereby request and petition that the deadline for response be extended for 3 month(s) up to and including October 1, 2003. Please deduct the dollar amount of \$475.00 for the extension of time fee as well as the \$43.00 fee for one independent claim in excess of three for a small entity according to 37 C.F.R. §1.17(a) from deposit account number 50-0959 (089498-0372). Please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Donald J. Firca, Jr.
Name of Attorney

Donald J. Firca, Jr. 1/10/01/03
Signature/Date

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A process for removing metals from an aqueous solution comprising the steps of:

distributing at least one lithic neutralizing agent and at least one lithic precipitating agent to preferentially precipitate said metals from said aqueous solution onto the precipitating agent; and

contacting said aqueous solution with said at least one lithic neutralizing agent and said at least one lithic precipitating agent that preferentially precipitates metals from the aqueous solution.

Claim 2 (original): The process of claim 1, wherein the at least one neutralizing agent is selected from the group consisting of limestone, marble, calcium carbonate, calcite, dolostone and dolomite.

Claim 3 (previously presented): A process for removing metals from an aqueous solution comprising the steps of:

contacting said aqueous solution with at least one lithic neutralizing agent and at least one lithic precipitating agent that preferentially precipitates metals from the aqueous solution, wherein the at least one precipitating agent is selected from the group consisting of sandstone, quartz, siltstone, quartzarenite, arkose, shale, feldspar, illite, gravel, granite, basalt, conglomerate, schist, slate, gneiss, diorite, gabbro, and rhyolite.

Claim 4 (original): The process of claim 1, wherein the metals are selected from the group consisting of iron, iron oxide, silica, aluminum oxide, magnesium oxide, copper oxide, chromium oxide, nickel oxide, lead oxide, zinc, zinc oxide, aluminum, magnesium, cadmium, copper, chromium, nickel, lead.

Claim 5 (original): The process of claim 1, wherein said step of contacting an aqueous solution involves adding the at least one neutralizing agent and at least one precipitating agent to a natural stream of water.

Claim 6 (canceled)

Claim 7 (previously presented): The process of claim 5, wherein the at least one neutralizing agent and at least one precipitating agent are added in gravel form.

Claim 8 (original): The process of claim 1, wherein said step of contacting an aqueous solution involves passing the aqueous solution through a pipe that includes both the at least one neutralizing agent and the at least one precipitating agent.

Claim 9 (previously presented): The process of claim 8, wherein the at least one neutralizing agent and the at least one precipitating agent are provided in the pipe as a mixture of pieces of the at least one neutralizing agent and the at least one precipitating agent.

Claim 10 (previously presented): The process of claim 8, wherein the at least one neutralizing agent and the at least one precipitating agent are provided in the pipe as alternating rings.

Claim 11 (previously presented): The process of claim 8, wherein said step of contacting an aqueous solution includes utilizing a pump to urge the aqueous solution through the pipe.

Claim 12 (New): A process for removing metals from an aqueous solution comprising the steps of:

providing a lithic neutralizing agent and a lithic precipitating agent;

exposing the aqueous solution to a surface of each of the neutralizing agent and the precipitating agent; and

preferentially precipitating the metals from the aqueous solution on the precipitating agent relative to the neutralizing agent.

Claim 13 (New): A process for removing metals from an aqueous solution comprising the steps of:

providing at least one neutralizing agent and at least one precipitating agent in a pipe as alternating rings;

passing the aqueous solution through the pipe that includes both the at least one neutralizing agent and the at least one precipitating agent; and
contacting said aqueous solution with the at least one lithic neutralizing agent and the at least one lithic precipitating agent that preferentially precipitates metals from the aqueous solution.

REMARKS/ARGUMENTS

Applicants thank the Examiner for the careful consideration given the present application, and respectfully submit that the application is allowable in view of the following remarks.

A final Office action and subsequent advisory action have been issued in which claims 1-5, 7-9 and 11 were rejected. Applicants note, with appreciation, the identification in the advisory action of claim 10 as allowable if rewritten in independent form, including the limitations of the claims from which it depends. Accordingly, claim 10 has been so rewritten as independent claim 13. Claim 1 has also been amended, and new claim 12 has been added to the present application. The amendments made by way of this amendment address the issues raised in the final Office action and advisory action as discussed below.

With regard to the rejection of claims 1, 4, 6, 8, 9 and 11 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,863,433 to Behrends, applicants respectfully submit that the amendments made to claim 1 herein place that claim, and its dependent claims, in a condition for allowance. Behrends is directed to reciprocating subsurface-flow constructed wetlands and a method for operating said wetlands for treatment of wastewater. Substrates are provided with microbial biofilms and are exposed to atmospheric oxygen concentrations at frequent and intermittent intervals via sequential and recurrent filling and draining of paired contiguous wetland cells. "[R]iver gravel and/or limestone, and/or any other appropriate substrate" will suffice as the substrate according to Behrends. During the drain cycles, oxygen is rapidly supplied to the dewatered, and relatively thin (from about one micron to about two millimeters thick), microbial biofilms residing on the substrates. This exposure to oxygen promotes growth of aerobic bacteria that forms a portion of the microbial biofilms on the substrate. See Col. 7, ln. 66 – Col. 8, ln. 21.

As part of the Behrends disclosure, numerous detailed examples are provided for creating and operating the constructed wetlands to treat wastewater. The examples differ from each other in the type and size of substrate used. In three of the examples, washed river gravel was used as the substrate, and in another example, limestone gravel was used. In none of the examples was a combination of more than one type of substrate used.

Further, the only mention of the distribution of the substrate in Behrends was of the size of the substrate used in different regions of the constructed wetlands. A stated objective of Behrends was to prevent plugging of pore void space by providing "at least two size grades of backfill material [substrate] such that the large size grade is distributed on the lower (bottom) portion of the treatment cells and the smaller size fraction is distributed on the top (upper) portion of the treatment cells." Col. 8, ln. 58-62. No other mention is made of the distribution of the backfill material. Thus, Behrends is silent about distributing the substrate material in a manner to preferentially precipitate metals from an aqueous solution on one substrate (the precipitating agent) over another available substrate (the neutralizing agent), as claimed in amended claim 1. Accordingly, applicants respectfully submit that claim 1 is not anticipated by Behrends.

Similarly, claims 1-6 were rejected in the final Office action under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Nos. 5,298,173 to Burke; 6,033,562 to Budeit; and 4,793,276 to Stafford. Again, applicants respectfully submit that the recent amendments to the claims render this rejection moot since the combination of references fails to teach every feature of the amended claims. For reasons analogous to those discussed above, the combination fails to teach distributing the at least one neutralizing agent and the at least one precipitating agent in a manner to preferentially precipitate the metals from the aqueous solution, as claimed in amended claim 1.

Further, applicants respectfully submit that Stafford is a non-analogous reference that cannot properly be relied upon to support a rejection under 35 U.S.C. §103. This reference is neither in the field of applicants' endeavor nor reasonably pertinent to the particular problem with which applicants were concerned. Stafford is also not a reference that logically would have commended itself to the applicants' attention in considering their problem. And in view of the amendments to the claims above, Stafford appears to be even less analogous to the claimed invention.

Applicants also respectfully submit that Burke, Budeit and Stafford, lack sufficient motivation therein to justify their combination. Each reference, individually and when combined, teach away from the present invention. The neutralizing agent of Burke, which is a block of gypsum and lime, is placed in bodies of water that are to be treated. Lime is time-released from the blocks to elevate the pH of the water. Increasing

the pH causes certain metals to precipitate from the water, presumably onto the blocks due to the absence of an accompanying precipitating agent. Accumulation of metal on the neutralizing agent is a process sought to be retarded by the provision of the precipitating agent as recited in claim 1 of the present invention. Accordingly, applicants respectfully submit that claims 1-6 are patentable over the combination of Burke, Budeit and Stafford.

Claims 1-5 and 7 were also rejected in the final Office action under 35 U.S.C. §103(a) as being unpatentable over Burke, Budiet and Stafford in view of U.S. Patent Nos. 1,742,110 to Weihe or 5,863,422 to Watten. In light of the amendments to the claims, however, applicants submit that the combination including Weihe or Watten also fails to teach every feature of the present invention. Again, the combined references fail to teach distributing the at least one neutralizing agent and at least one precipitating agent as claimed in amended claim 1. The remarks above are equally applicable to these combinations of references, and are incorporated herein by reference.

Also applicable to the combinations including Weihe or Watten are the applicants' remarks concerning the inclusion of Stafford, which applicants deem to be a non-analogous reference relied upon to support a rejection based upon 35 U.S.C. §103. And again, applicants respectfully submit that the combination including Watten teaches away from the present invention by addressing the accumulation of precipitated metals in an alternative fashion. Watten discloses controlling the accumulation of metal precipitates on the neutralizing agent particles by periodically colliding the particles together. Forces generated by the collisions flake the metals from the particles. There is no mention in Watten of a precipitating agent to divert the precipitation of metals preferentially away from the neutralizing agent according to the present invention. Similarly, Weihe does not teach the inclusion of a precipitating agent as claimed in amended claim 1.

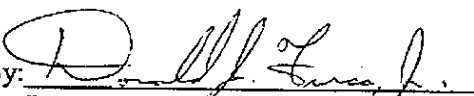
Independent claims 1, 3, 12 and 13 should be in a condition for allowance in light of the amendments to the claims and the remarks above. The remaining dependent claims 2, 4, 5 and 7-11 should be allowable for the limitations therein and for the limitations in the claims from which they depend. Notice to that effect is hereby requested.

In the event that minor issues remain unresolved, the Examiner is requested to contact the undersigned to arrange for a telephone interview to expedite disposition of this application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 500959 (089498.0372) for any fees required under 35 C.F.R. §1.16 or 1.17.

Respectfully submitted,

ROETZEL & ANDRESS

By: 
Donald J. Firca, Jr., Reg. No. 48,140

222 South Main Street
Akron, OH 44308
330/849-6779

Date: September 30, 2003

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26360 7590 04/01/2003

RENNER, KENNER, GREIVE, BOBAK, TAYLOR & WEBER
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EXAMINER

BARRY, CHESTER T

ART UNIT

PAPER NUMBER

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DATE MAILED: 04/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

due
7-1-03
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| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/776,298 | SASOWSKY ET AL. | |
| | Examiner | Art Unit | |
| | Chester T. Barry | 1724 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address: --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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All rejections from the Office action mailed 10/8/02 are incorporated herein by reference, repeated, and maintained except as noted below:

The §112(2nd) rejection of claim 6 is withdrawn.

All references to claim 6 in any other rejections are omitted from those rejections.

Applicants argue Behrends is unclear with respect to whether the substrate described there is or can be a mixture two different materials. The examiner disagrees. Behrends discloses: "[B]iofilms residing on backfill substrate, [that is,

biofilms residing on river gravel,

biofilms residing on limestone,

biofilms residing on river gravel and limestone,

biofilms residing on river gravel and any other appropriate substrate,

biofilms residing on limestone and any other appropriate substrate,

biofilms residing on river gravel, limestone and any other appropriate substrate,

and

biofilms residing on any appropriate substrate other than river gravel or

limestone] for that is what the passage at col 8 lines 4 – 11 ~~says~~. If it doesn't mean that, then applicants are invited to file a 132 declaration from a university or college English professor explaining what it does mean. The declaration would be considered very

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carefully,¹ but also in light of claim 7 of USP 5945035 to Vogt. Vogt is substantial evidence that in English, a substrate can be mixture of heterogeneous materials.

Applicants argue that in the Behrends passage above, "and/or" means that a single substrate ~~be~~ present for his process. Applicants' argument is premised on the point that a substrate may not be a mixture of different materials. The examiner finds this argument unpersuasive. Applicants' very own specification flowing a solution "through a gravel form of at least one neutralizing agent and at least one precipitating agent." If the examiner were to adopt applicants' argument with regard to Behrends use of "substrate" in the narrow sense of relating to only a homogeneous material, then how could it be that "a" gravel form could be comprised of two different agents?

Applicants argue that it is "incontrovertible" (i.e., not open to question), that Behrends does not teach that using two specific materials together can result in improved precipitation of metals from solution. Applicants' argument is inapposite of novelty. Hence, even if Behrends fails to appreciate a synergistic or other unexpected benefit of using a mixture of different materials as his "substrate" associated with precipitation of metals from solution, it would not be relevant on the question of novelty. Further, with respect to the use of Behrends in the §103 rejection, applicants have not shown or demonstrated any unexpected results, i.e., better results using a mixture of neutralizing

¹ It would be helpful for such a credentialed expert to comment on whether it is reasonable to question what "and/or" means. In the expression "A and/or B," does it not unquestionably mean, "A without B, B without A, or both A and B together"? The examiner finds applicants' "questionable interpretation" argument (at page 4) related to the meaning of "and/or" unquestionably unpersuasive.

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agent and precipitating agent vs. sequential treatment of the solution first through a bed of either only neutralizing agent (or only precipitating agent) followed by passage through a bed of only precipitating agent (or neutralizing agent), respectively. If those test results are available, I'd like to see them.

Applicants' reference to "unexpected results" at page 3 line 22 is unsupported by probative evidence. See the suggested test results discussed above. It is not clear from Table 4 how much sandstone was used in the "sandstone [only]" test (first table entry) and how much limestone was used in the "limestone [only]" test (second table entry). The amounts of each were reported only for the mixed test (5 g each of sandstone and limestone).

Applicants' remaining arguments were also carefully considered, but they were not persuasive. Applicants did not respond to the §112, rejection of claim 10.


THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


CHESTERT. BARRY
PRIMARY EXAMINER

703-306-5921

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of)

IRA D. SASOWSKY *et al.*)

Serial No. 09/776,298)

Filed February 2, 2001)

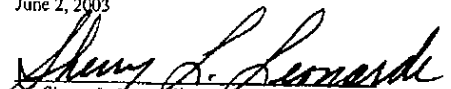
For A METHOD FOR REMOVING)
 METALS FROM AQUEOUS)
 SOLUTIONS USING MIXED)
 LITHIC MATERIALS)

Group Art Unit 1724

C. Barry, Examiner

Certificate of Mailing

I hereby certify that this correspondence was deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Mail Stop Non-Fee Amendment, P.O. Box 1450, Alexandria, VA 22313-1450, on June 2, 2003


 Sherry L. Leonard

RESPONSE UNDER 37 C.F.R. § 1.116

Commissioner for Patents
 Mail Stop Non-Fee Amendment
 P.O. Box 1450
 Alexandria, VA 22313-1450

Sir:

In response to the Official Action mailed April 1, 2003, Applicants, respond as follows.

Remarks/Arguments begin on page 1 of this paper.

REMARKS

The Examiner has maintained all rejections from the Office Action mailed October 8, 2002. In support of the continued rejection of all pending claims, the Examiner provided responsive arguments to some of the arguments that Applicants submitted in their response of January 31, 2003. Having fully considered the Examiner's position, it is clear that the Examiner gives too much credit to the Behrends reference and what it teaches to those of ordinary skill in the art. Particularly, Behrends does not sufficiently describe the claimed invention to have placed it in the public's possession as required if it is to be properly employed to anticipate the present invention.

The Examiner has rejected claims 1-4, 8, 9 and 11 as being anticipated by Behrends '433, particularly at Col. 8, lines 4-11, wherein a confusing and vague disclosure of backfill

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substrates is provided as follows:

"[d]uring the drain cycle, atmospheric oxygen is rapidly supplied to the de-watered and relatively thin (from about 1 micron to about 2 millimeters thick) microbial biofilms residing on backfill substrate, i.e., river gravel and/or limestone, and/or any other appropriate substrate, thus promoting growth of aerobic bacteria which are responsible for oxidizing ammonia (nitrification), various heavy metals, and other toxic compounds."

The Examiner interprets this language to mean that Behrends unequivocally teaches the use of river gravel and limestone together to treat acidic mine drainage. Indeed, in response to Applicants' argument that Behrends should not be interpreted in that manner, the Examiner, in the present Office Action, holds that "Behrends discloses: '[B]iofilms residing on backfill substrate, [that is,¹ biofilms residing on river gravel, biofilms residing on limestone, biofilms residing on river gravel and limestone, biofilms residing on river gravel and any other appropriate substrate, biofilms residing on limestone and any other appropriate substrate, biofilms residing on river gravel, limestone and any other appropriate substrate, and biofilms residing on any appropriate substrate other than river gravel or limestone]. The Examiner then invites Applicants to provide a §132 Declaration from a university or college English professor to explain whether or not the "and/or" terminology used in Behrends should be interpreted in this manner.

The Examiner is curious as to whether it is reasonable to question what "and/or" means, and Applicants submit that it most certainly is reasonable to question the use of such language. Submitted herein is an excerpt from Bryan A. Garner's *A Dictionary of Modern Legal Usage*, Second Edition, Oxford University Press (1995), wherein, although it is admitted that the specific meaning of "x and /or y" is "x or y or both," it is noted that "and/or" "lends itself . . . as much to ambiguity as to brevity." It is also noted that various courts have looked upon "and/or" with disfavor, with at least one court noting that "the highly objectionable phrase *and/or* . . . has no place in pleadings, findings of fact, conclusion of law, judgments or decrees, and least of all in instructions to a jury." Another court has noted: "[T]o our way of thinking

¹ The Examiner is replacing the use of "i.e." in the Behrends reference with "that is," which is a fairly good translation of "i.e." Notably, "i.e." literally means "that is to say."

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the abominable invention *and/or* is as devoid of meaning as it is incapable of classification by the rules of grammar and syntax." Another court has noted that "and/or" may even be used by lawyers "as a cunning device to conceal rather than express meaning." Applicants submit that "and/or" has the tendency to confuse rather than clarify meaning in patent applications, wherein specificity of disclosure is highly important. Thus, it is absolutely reasonable to question what "and/or" means. While, "and/or" does have a specific meaning, it is often employed incorrectly and very rarely offers precision in meaning.² In Behrends, ""and/or" simply does not teach what the Examiner contends.

The Examiner's interpretation of the cited section of Behrends, as set forth in the present Action, at page 2, is incorrect. The Examiner claims that Behrends discloses biofilms residing on river gravel, biofilms residing on limestone, biofilms residing on river gravel and limestone, etc., as if the "i.e., river gravel and/or limestone, and/or any other appropriate substrate" portion of the cited section modifies the biofilms and where they reside, and, thus, teaches biofilms residing on river gravel and limestone at the same time. This interpretation is incorrect, because the "i.e." clause only modifies "substrate" and provides "river gravel and/or limestone and/or any other appropriate substrate" only as examples of potential substrates. This distinction is significant in that Behrends never conclusively teaches that both river gravel and limestone can be employed at the same time to promote the growth of biofilms on such a mixed substrate. Rather, at best, Behrends teaches that a singular substrate may be selected from river gravel or limestone or any other appropriate substrate. Indeed, the "and" in the "and/or" language does not necessarily lead one to the conclusion that a backfill substrate in Behrends may be a mixture of two materials. It is important to note that the sentence directly before the cited portion of Behrends reads as follows: "With the concept of recurrent reciprocation, **the wetlands' substrates** (backfill) and their associated biofilms are exposed to atmospheric oxygen concentrations at frequent and intermittent intervals via the

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Applicants sincerely hope that Bryan A. Garner is considered enough of a "credentialed expert" for the Examiner.

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sequential and recurrent filling and draining of paired contiguous wetland cells.³ In the very next sentence, wherein "backfill substrate" is followed with "i.e., river gravel and/or limestone, and/or any other appropriate substrate," it should be appreciated that multiple wetlands and multiple substrates are being considered, such that Behrends teaches nothing of employing river gravel and limestone together. Rather, inasmuch as Behrends is speaking of multiple substrates employed in multiple wetland cells it is impossible to tell whether river gravel and limestone are taught as being supplied together as one backfill substrate or whether they are to be provided one in one wetland cell and the other in another wetland cell.

From the foregoing, we see that it is likely that the "and/or" language employed in Behrends was simply a sloppy way of providing a list of potentially useful singular substrates that could be employed across a large number of wetlands, each with a plurality of paired cells. There is certainly no sufficient disclosure within Behrends to inform the reader that the river gravel and limestone are to be used together. "It is well settled that prior art under 35 U.S.C. § 102(b) must sufficiently describe the claimed invention to have placed the public in possession of it."⁴ Particularly, "the reference must put th anticipating subject matter at issue into the possession of the public through an enabling disclosure."⁵ If Behrends is fully considered for all that it teaches, it is clear that it does not place the public in possession of a process for removing metals from an aqueous solution that includes the steps of contacting the solution with at least one lithic neutralizing agent and at least one lithic precipitating agent that preferentially precipitates metals from the aqueous solution. Behrends is too unclear with respect to its substrate disclosure and does not provide an enabling disclosure at to mixing substrates. Those portions of Behrends cited by the Examiner serve only to confuse the reader as to the identity of useful substrates. Those of ordinary skill in the art would interpret the "and/or" language as merely a generic connector between potential singular substrates,

³ Behrends '433 at Col. 7, line 66 /Col. 8, line 4. (emphasis added)

⁴

See In re Donahue, 766 F.2d 531, 533 (1985). See also *Reading & Bates Construction Co. v. Baker Energy Resources Corp.*, 748 F. 2d 645, 651-52 (Fed. Cir. 1984).

⁵ See *Chester v. Miller*, 15 U.S.P.Q. 2d 1333, 1336 (Fed. Cir. 1990) (footnote 2, citing *In re Donahue*).

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especially in light of the fact that, in each and every example provided in Behrends, a singular substrate is employed, and further in light of the fact that it is the general practice in the art to employ singular substrates. Because Behrends fails to place the public in possession of the claimed process, the claimed process is not anticipated by Behrends, and reconsideration of claims 1-4, 8, 9 and 11 is respectfully requested.

In response to the Examiner's contention that Applicants' prior argument was premised on the point that a substrate may not be a mixture of different materials, Applicants note that they never made such an argument. Rather, Applicants argued that Behrends does not teach the use of a mixture of river gravel and limestone, as the Examiner held. Regarding the Examiner's comments respecting Applicants' description of flowing a solution "through a gravel form of at least one neutralizing agent and at least one precipitating agent," it is noted that "a gravel form" can relate to more than a homogenous material because Applicants have defined it as such in their specification. The Examiner's comments on page 3 of the present Office Action are not well taken inasmuch as the Examiner appears to be comparing apples and oranges. The Examiner compares "substrate" to "a gravel form" and also ignores the fact that an applicant can be his own lexicographer to shed light on the meaning of certain terms. Indeed, at page 6, lines 25-29 of the present specification it will be seen that Applicants have sufficiently disclosed how to interpret "a gravel form" as it relates to their own disclosure, regardless of how "a gravel form" may be interpreted in somebody else's disclosure or in some other context.

The Examiner states that Applicants have not shown or demonstrated any unexpected results with respect to the use of Behrends in the §103 rejection of claim 7, and, with respect to claim 7, the Examiner is correct. Particularly, Applicants rely upon the fact that Behrends does not anticipate the independent claim upon which claim 7 is based. But notably, Applicants have demonstrated unexpected results, particularly with respect to the Examiner's application of Burke, Budiet, and Stafford to reject claims 1-6 as obvious. Before turning to that rejection, Applicants note that it is unclear to them as to how the Examiner is applying Behrends in the § 103 rejection of claim 7 in light of the unexpected results that the Examiner

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would "like to see." ⁶

The Examiner maintains the rejection of claims 1-6 as obvious over Burke, Budiet, and Stafford. In their prior response, Applicants traversed this rejection by explaining the unexpected results that are obtained by designing a system that purposefully juxtaposes a neutralizing agent and precipitating agent as currently claimed. Particularly, Applicants relied upon Example 3 and Table 4 from their specification. The arguments presented in Applicants' prior response are incorporated herein by reference.

The Examiner presently holds that the "unexpected results" submitted to support an argument against obviousness are unsupported by probative evidence. The Examiner states that it is not clear from Table 4 how much sandstone was used in the "sandstone [only]" test and how much limestone was used in the "limestone [only]" test, and incorrectly states that the amounts of each were reported only for the mix test, wherein 5 grams of limestone and 5 grams of sandstone were employed. The Examiner did not critically consider Table 4, because Table 4 clearly notes that "[b]atch reactors with 10 grams of solid material and 100 mL of Silver Creek water spiked with ferrous iron (pH = 4.5)" were employed. The "solid material" is "Tuscarora sandstone" for the "sandstone [only]" test and is "Columbus limestone" for the "limestone [only]" test. The level of metal removal achieved in the batch reactor with mixed solid material is certainly unexpected considering the level of removal achieved with sandstone only and limestone only. Applicants' "unexpected results" arguments are supported by probative evidence, and reconsideration of all obviousness rejections is respectfully requested, including the obviousness rejection that adds Weihe or Watton to Burke, Budiet, and Stafford. The Examiner has not responded to Applicants arguments regarding the rejection of claims 8-11 as obvious over Watton in view of Chapman, and Applicants would

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Particularly, it is unclear to the Applicants why they would have to show "better results using a mixture of neutralizing agents and precipitating agent vs. sequential treatment of the solution first through a bed of either only neutralizing agent (or only precipitating agent) followed by passage through a bed of only precipitating agent (or neutralizing agent), respectively. Applicants respectfully request that the Examiner set forth his rejections in detail rather than simply citing the portions of a patent and then leaving it up to the Applicants to respond. It would appear that the Examiner has a somewhat involved §103 rejection in mind with respect to the application of Behrends to claim 7, but this application has not been particularly set forth in any office action. Applicants are surely prejudiced by the Examiner's lack of specificity.

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like the record to reflect that this rejection has been overcome.

The Examiner has rejected claim 10 under § 112 on the basis that it is unclear what an "alternating ring" is from the specification. In response, Applicants cite to their specification at page 6, line 30 to page 7 line 5, wherein it is noted that the pipe may be "lined with the at least two agents." It should be clear that pipes are typically circular, such that they could be lined with alternating rings of neutralizing and precipitating agents with the hole in the ring providing the conduit through which the aqueous solution may pass. Applicants contend that claim 10 is clear.

In light of the foregoing, a Notice of Allowance for all pending claims is respectfully requested. Should the Examiner wish to discuss any of the foregoing in greater detail, the undersigned attorney would welcome a telephone call. If the Examining Attorney is to maintain his objection to Applicants unexpected results argument, Applicants would greatly appreciate a better explanation as to the Examiner's position regarding what type of unexpected results data needs to shown and why the present showing is not considered sufficient. Further, if such rejections are maintained Applicant's submit that the finality of the present Office Action is improper inasmuch as it would appear that the Examiner has not made his position clear, to the prejudice of Applicants.

Respectfully submitted,



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Attorney for Applicant(s)

Dated: 2 June 2003

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by the upt period ending the sentence and may even wonder whether a part of the enumeration has been inadvertently omitted. One may occasionally omit *and* before the final element in an enumeration with a particular nuance in mind: without *and* the implication is that the series is incomplete—rhetoricians call this construction “asyndeton”; with *and* the implication is that the series is complete. This shade in meaning is increasingly subtle in modern prose. For examples drawn from the writings of Benjamin N. Cardozo, Karl Llewellyn, and Gerald Gunther, see Bryan A. Garner, *The Elements of Legal Style* 159–60 (1991).

Finally, on the question of punctuating enumerations, the best practice is to place a comma before the *and* introducing the final element. See PUNCTUATION (C)(2).

and etc. See etc.

and his children; and her children. This phrase ought to be avoided in wills because it gives rise to an interpretative dilemma: is the phrase one of limitation, i.e., does it indicate the size of the estate given? Or is it one of purchase, i.e., does it indicate a gift also to the afterborn children themselves? See **words of purchase**.

and his heirs; and her heirs. These phrases are quintessential pre-20th-century TERMS OF ART—pieces of magical language—formerly necessary to create a fee-simple interest. They are no longer necessary, as it is now possible to say, “I convey to you Blackacre in fee simple,” and the words will have that very effect.

and/or. A. General Recommendation. A legal and business expression dating from the mid-19th century, *and/or* has been vilified for most of its life—and rightly so. The upshot is that “the only safe rule to follow is not to use the expression in any legal writing, document or proceeding, under any circumstances.” Dwight G. McCarty, *That Hybrid “and/or,”* 39 Mich. State B.J. 9, 17 (1960). Many lawyers would be surprised at how easy and workable this solution is. See **either (D)**.

B. A Little History. Lawyers have been among *and/or*’s most ardent haters, though many continue to use it. The term has been referred to as “that befuddling, nameless thing, that Janus-faced verbal monstrosity, neither word nor phrase, the child of a brain of someone too lazy or too dull to express his precise meaning, or too dull to know what he did mean, now commonly used by lawyers in drafting legal documents, through carelessness or ignorance or as a cunning

device to conceal rather than express meaning.” *Employers’ Mut. Liab. Ins. Co. v. Tollefsen*, 263 N.W. 376, 377 (Wis. 1935) (per Fowler, J.). Another court has stated: “[T]o our way of thinking the abominable invention *and/or* is as devoid of meaning as it is incapable of classification by the rules of grammar and syntax.” *American Gen. Ins. Co. v. Webster*, 118 S.W.2d 1082, 1084 (Tex. Civ. App.—Beaumont 1938) (per Combs, J.).

These views, in retrospect, are more amusing than insightful. *And/or*, though undeniably clumsy, does have a specific meaning (*x and/or y = x or y or both*). But, though the phrase saves a few words, it “lends itself . . . as much to ambiguity as to brevity . . . it cannot intelligibly be used to fix the occurrence of past events.” *Ex parte Bell*, 122 P.2d 22, 29 (Cal. 1942). *And/or* “commonly mean[s] ‘the one or the other or both.’” *Amalgamated Transit Union v. Massachusetts*, 666 F.2d 618, 627 (1st Cir. 1981). (See the quotation under **amphibology**.) This definition suggests the handiest rewording: a good way to avoid the term is to write *unlawful arrest or malicious prosecution, or both*, instead of *unlawful arrest and/or malicious prosecution*.

Sometimes *and/or* is inappropriate substantively as well as stylistically. Many types of legal documents have been spoiled by the indecivensness of *and/or*:

- a finding of fact (“associate *and/or* employ”);
- a pleading (“office *and/or* agent”);
- an affidavit (“fraud *and/or* other wrongful act”);
- a will (“to Ann *and/or* John”);
- an indictment (“cards, dice, *and/or* dominoes”);
- a judgment (in an action that described the plaintiff by the formula *Jones and/or Jones, Inc.*).

Courts have not been kind to the word—e.g.: “[T]he highly objectionable phrase *and/or* has no place in pleadings, findings of fact, conclusions of law, judgments or decrees, and least of all in instructions to a jury. Instructions are intended to assist jurors in applying the law to the facts, and trial judges should put them in as simple language as possible, and not confuse them with this linguistic abomination.” *State v. Smith*, 184 P.2d 301, 303 (N.M. 1947).

Moreover, the term gives a false sense of precision when used in enumerations: “In an enumeration of duties or powers, either conjunction is generally adequate. If *or* is used, no one would seriously urge that if one enumerated duty or power is performed or exercised, the remainder vanish; and if *and* is used, no one would say that an enumerated duty or power cannot be exercised or performed except simultaneously with all the

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others." Elmer A. Driedger, *The Composition of Legislation* 79 (1957).

C. Editing the Hieroglyph. Sometimes *and/or* ought to be replaced by *and* itself—e.g.: "There is usually a blackboard, on which issues *and/or* [read *and*] votes may be recorded." Robin T. Lakoff, *Talking Power: The Politics of Language in Our Lives* 122 (1990). (No one would seriously suggest that both issues and votes must be recorded on such a blackboard in a jury room.) "Mr Pearce *and/or* [read *and*] his publisher are to be congratulated for working so fast." Joe Rogaly, *Behind the Man from Nowhere*, *Fin. Times* (Week-end), 27–28 April 1991, at xviii. (If the book has come out promptly, then both the author and the publisher must have worked fast.)

At other times, *and/or* ought to be replaced by *or*—e.g.: "The legal disadvantages of illegitimacy can mostly be avoided by making a will *and/or* [read *or*] adopting the child . . ." Glanville Williams, *The Sanctity of Life and the Criminal Law* 121 (1957). (No one would seriously suggest that one could be put to an election between making a will and adopting a child—i.e., that one could not do both.) For dealing with the construction *either . . . and/or*, see **either (E)**.

D. Or/and. This reversal of the words is a rare variant of *and/or* with none of the latter's virtues, and all its vices. Rather than hopelessly confuse readers by resorting to its pretended nuance, one should abstain from it completely.

and other good and valuable consideration. This phrase, used in consideration clauses of contracts, is sometimes false, as when all the legal consideration for the contract given is mentioned explicitly. The phrase should be avoided unless it serves a real function; that is, unless the rest of the items of consideration are too numerous and individually trifling to merit specific inclusion, or unless the parties to the contract do not wish to recite the true price in a publicly recorded document. The drafter of a contract should have some purpose in mind in using this phrase. For the distinction between *good consideration* and *valuable consideration*, see **consideration (D)**.

and which. See **which (C)**.

anecdotal; anecdotic(al). The first is standard; the other forms are NEEDLESS VARIANTS. In reference to evidence, *anecdotal* refers not to anecdotes, but to personal experiences of the witness testifying. Leff trenchantly calls *anecdotal evidence* "a term of abuse in assessing a social science argument." Arthur A. Leff, *The Leff Dictionary of Law*, 94 *Yale L.J.* 1855, 2023 (1985). E.g.,

"In probing discriminatory intent, the trial court may examine the history of the employer's practices, *anecdotal* evidence of class members, and the degree of opportunity to treat employees unfairly in the appraisal process."

anent. Bernstein writes, "Except in legal usage, *anent* [= about] is archaic and semiprecious." Theodore M. Bernstein, *More Language That Needs Watching* 24 (1962). He could have omitted *except in legal usage* and *semi*.

Another usage critic (following Fowler) has given somewhat narrower guidelines, for the term is still sometimes used in Scotland: "[A]part from its use in Scotch law courts, [*anent*] is archaic." Margaret Nicholson, *A Dictionary of American-English Usage* 25 (1957). Perhaps the best statement is that *anent* "is a pompous word and nearly always entirely useless." Percy Marks, *The Craft of Writing* 47 (1932).

The term was not uncommon through the first half of the 20th century. E.g., "*Anent* [read *With regard to*] the dismissal, the bank's attorney testified that . . . the memorial company had advertised the property for sale on December 7." *Gandy v. Cameron State Bank*, 2 S.W.2d 971, 973 (Tex. Civ. App.—Austin 1927). Today it occurs only infrequently in legal writing, but examples of it can still be found: "The district court denied Fiat's motion to dismiss . . . and ordered the parties to resolve any dispute *anent* [read *about or over*] service on that basis." *Boreri v. Fiat S.P.A.*, 763 F.2d 17, 19 (1st Cir. 1985).

anesthetic, n.; anesthesia. An *anesthetic* (e.g., ether) causes *anesthesia* (= loss of sensation). AmE prefers these spellings, BrE *anaesthetic, anaesthesia*.

anesthetist; anesthesiologist. Generally, *anesthetist* will serve for "one who administers an anesthetic." The term dates from the late 19th century. *Anesthesiologist*, of World War II vintage, refers specifically to a physician specializing in anesthesia and anesthetics.

ANFRACUOSITY, or syntactic twisting and turning and winding, has been one of the historical banes of legal prose. It was more common in the late 19th and early 20th centuries than it is today. Let us trace our gradual liberation from anfractuosity, while noting some modern throwbacks. The following is a classic 19th-century example:

Unless the code, by abolishing the distinction between actions at law and suits in equity, and the forms of such actions and suits, and of pleadings theretofore existing, intended to initiate, and has initiated new principles of